Atty. Docket No.: CA1459
PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/923,157

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1.   (*Currently Amended*)   A system comprising:

a plurality of data centers, including a first data center and a second data center, each data center comprising:

     a storage system; and

     a host server;

a directory server comprising information on the first data center and the second data center;

a plurality of access gateways;

a network interconnecting said plurality of data centers, said directory server, and said plurality of access gateway; wherein each of said plurality of data centers is accessible from at least one of said plurality of access gateways and wherein,

responsive to input received via any one of said plurality of access gateways, the information about the first data center and the second data center is fetched from the directory server, the fetched information comprising proximity information for a source of said input and any of said plurality of data centers may be configured as a primary (source) of data, and any of said plurality of data centers may be configured as a secondary (target) of data in a copy operation based on the fetched information.

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2.   *(Cancelled)*

3.   *(Currently Amended)* The system of claim [[2]] 1, wherein, responsive to a second input received via any of said plurality of access gateways, said first data center may be reconfigured as a secondary (target) of data, and said second data center may be configured as a primary (source) of data in a second copy operation.

4.   *(Original)* The system of claim 3, wherein copy operations are synchronous, said first data center updating contents of storage from contents of a cache memory prior to being reconfigured to as a secondary (target) in said second copy operation.

5.   *(Cancelled)*

6.   *(Currently Amended)* The system of claim [[2]] 1, wherein said plurality of data centers further comprises a third data center, said third data center being configured as another secondary (target) of data in a copy operation.

7.   *(Original)* The system of claim 1, further comprising a network interface that provides connection between at least one of a plurality of access gateways and a user terminal.

8.   *(Original)* The system of claim 1, wherein information associated with a virtual volume is stored in a plurality of real volumes in said storage system.

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9.   (*Original*) The system of claim 8, wherein a correspondence between said virtual

volume and said plurality of real volumes in said storage system is stored in said directory

server.

10.   (*Original*) The system of claim 1, wherein a storage volume from said first data

center and a storage volume from said second data center comprise a copy volume group.

11.   (*Original*) The system of claim 1, said directory server further comprising a log

in process and a virtual volume information.

12.   (*Original*) The system of claim 1, said host server further comprising a copy

volume group interface process, a read request issue process, and a write request issue process.

13.   (*Currently Amended*) A method, comprising:

receiving a virtual volume name and network interface ID for a user;

using a directory server to find ~~finding~~ a virtual volume corresponding to said virtual

volume name and network interface ID;

selecting a real volume information corresponding to a data center to which said user is

logged into;

determining whether said data center is primary;

if said data center does not contain a primary volume, issuing a request to change a

volume within said data center to a primary volume, waiting for a response to said request, re-

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setting a current primary volume, and setting said volume within said data center to be primary;

and

returning a real volume information for said volume within said data center set to

primary.

14-21.   (*Canceled*)

22.   (*Currently Amended*) A system comprising:

a plurality of data centers, including a first data center and a second data center, each data

center comprising:

a storage system; and

a host server;

a directory server comprising information on the first data center and the second data

center;

a plurality of access gateways;

a network interconnecting the plurality of data centers, the directory server, and the

plurality of access gateways; wherein each of the plurality of data centers is accessible from at

least one of the plurality of access gateways and wherein, responsive to an input received via any

one of the plurality of access gateways, the directory server is operable to furnish information on

the first data center and the second data center, the furnished information being indicative of a

proximity of the one of the plurality of access gateways associated with the received input and at

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least one data center and any of the plurality of data centers is operable to initiate a bi-directional

data copying operation with any other of the plurality of data centers.

23.   (*Cancelled*)

24.   (*Currently Amended*) The system of claim [[23]] 22, ~~wherein the furnished~~

~~information is indicative of a proximity of the one of the plurality of access gateways associated~~

~~with the received input and at least one data center and~~ wherein the first data center is selected

from the plurality of data centers based on the furnished information.

25.   (*Previously Presented*) The system of claim 22, wherein each of the plurality of

data centers is operable to act as a primary (source) or a secondary (target) in the data copying

operation.

26.   (*Previously Presented*) The system of claim 25, wherein each of the plurality of

data centers is configurable as the primary (source) or the secondary (target) based on a

proximity information received from the directory server in response to the input.

27.   (*Previously Presented*) The system of claim 22, wherein data stored in the

storage system of each of the plurality of data centers is organized into at least one virtual

volume.

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    28.   *(Previously Presented)* The system of claim 27, wherein the storage system of each of the plurality of data centers stores information associating the at least one virtual volume with a corresponding physical volume.